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## The Implementation and Development of Air Traffic Control(ATC) in CAAC

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Since China carries out the policy of reform and opening up to the outside-world, the economic development has brought vitality and created a favorable environment for the development of the civil aviation industry in China. In the past ten years, the civil aviation industry in China has developed rapidly, with the passenger traffic growth rate of 14.5% annually. Along with the progress made in the civil aviation industry, ATC service has also developed greatly and air traffic flow increases continuously. The air traffic flow of civil aircraft nationwide is about 1500 flights every day and at the airports with heavy traffic, such as Beijing, Guangzhou, Shanghai are about 300 flights per day. At present, procedure-control is still mainly adopted by ATC service of China's civil aviation industry and radar-control has already been employed on some busy air routes.

In order to implement Air Traffic Control, China has now set up 9 flight information regions, 21 high level flight control areas, 37 low level control areas, 100 approach control and aerodrome control towers as well as 9 search and rescue areas.

The followings are the ATC facilities we have at present:

### 1. Communication Facilities

Automated medium and high speed switching network is established, with Beijing as their center, which connecting major domestic airports with foreign airports. Automated low speed switching system is set up at the principal airports, which lays foundation for transmission of various telex and data information and guarantee of communication in civil aviation. In the field of ground to air communication, VHF facilities are mainly used at the airports and in the approach areas. HF single side-band facilities are used on air routes generally, and VHF facilities have been used on some routes.

### 2. Navigation Aids

VOR and DME have been installed on all international and some domestic routes for providing enroute navigation. Most of domestic routes still use NDB for the same purpose. Navigation aids used at airports are mostly ILS system. At present, 43 airports have been equipped with 51 Cat.I ILS system. ILS system at Beijing Capital Airport will transit to Cat.II operation. The introduction of ILS has improved flight regularity and lowered flight take-off and landing minima.

### 3. ATC Radars

At the present time, ATC has 22 sets of Secondary Surveillance Radars and 9 sets of Primary Radars, which have been installed respectively on Beijing-Guangzhou, Guangzhou-Shanghai, Shanghai-Beijing routes. In addition, primary and secondary radars have also been installed in Dalian, Shenyang, Sanya, Xi'an, Chengdu, Kunming and Xiamen, covering almost all high level regions of above 7000 meters from the east of Shenyang-Beijing-Xi'an-Chengdu-Kunming and therefore, the improvement of radar-control service is ensured.

### 4. Meteorological Facilities

In recent years, CAAC has invested a great deal of money in the improvement of meteorological facilities. Now, auto weather observing systems have been installed in 8 airports. 21 airports have been equipped with weather satellite receiving equipments. Weather radars, auto MET chart plotting system, radar digital processing system, video screen explaining weather systems, auto MET information processing systems, laser probes and VOLMET broadcasts have been introduced to 46 airports, which has made aeronautical meteorological service more timely and accurately and has satisfied the domestic and international flight operation.

### 5. Aeronautical Information Service

A complete aeronautical information services have been established in CAAC headquarters and regional administrations of civil aviation, as well as airlines for collecting, collating, designing, producing and issuing aeronautical information and charts required by flights, as well as editing, drawing, printing Instrument Approach Chart, Standard Instrument Arrival/Departure Chart and ect. AIS office of CAAC is responsible for provision of aeronautical information service to 77 domestic aviation units and more than 40 foreign airlines, and has established the information interchange relation with 48 countries and regions.

Despite of a lot of efforts made in the field of ATC services, we still have not met the demand of development of civil aviation industry. In order to offer more desirable ATC service and improve controlling capabilities, CAAC will invest another 1.2 billions RMB to enhance navigation system in the 8th Five-year-Plan period (1990-1995). This program is composed of 400 projects. The completion of the program results in covering the major air routes by VHF, radars and VOR.

In the next five years, we plan to install another 15 radars, 53 sets of VOR/DME and 24 ILS system. And we will establish a satellite-to-ground communication network which is composed of 97 ground receiving stations. We are going to set up an Automated Computer Management Systems for AIS and meteorological data

processing in aeronautical meteorological center which will be located in Beijing.

With a view to improving professional and managerial competence of the staff, despite of further enhancement of conventional education and on-job training for various professionals, efforts are also to be made to establish a communication, navigation and radar technical training center in China. In the field of air route plan, it is expected to open non-stop route from the Southeast Asia to Europe via China and we plan to establish a great circle route from Asia to the North America via China and the Soviet Union.

Coming to recognize that the next decades will be the transition period for the Future Air Navigation System (FANS), we will take an active part in participating this program and coordinate with ICAO in efforts for making China's transition plan, in order to lay sound foundation for the significant evolution of air navigation system in the future.

As China's civil aviation industry is still a developing one, its ATC facilities and technology are far from being advanced, we are facing a hard and heavy task in these fields. We'll go all out to establish a reliable navigation system for providing excellent ATC service. We are sure that this goal can be achieved in the near future.

Here we'd like to take this opportunity to express our heartfelt thanks to the colleagues from countries of Asia Pacific regions for their support to China's ATC service, as well as to the ATC agencies of our neighboring countries and regions for their close coordination with us. We are confident that the cooperation will be growing. Let's make joint efforts and do a great contribution to the development of aviation industry in Asia and Pacific Region.